

Red is Good

When you're talking more meat, not ink

STORY AND PHOTOS BY TIM O'BYRNE

Working Ranch has always been a 'hands-on' magazine, so any chance I get to see things up close I take it. Such a chance dropped into my lap recently when the folks at Merck Animal Health invited me to take in a two-day seminar they were putting together at the University of Nebraska Lincoln (UNL). My classmates consisted of a dozen feedyard managers and owners from Nebraska and beyond, each with a unique background and management style, but all sharing the same passion for competitive further-education.

The goal of this seminar was to take a good look at how feeding a **beta-agonist** (a chemical substance that combines with a cell receptor to produce a physiologic response) affects a feedyard steer carcass. The only way to find out, I mean **really** find out, is to do what the Meat Science faculty at UNL did; sort out six genetically and physically similar steers, feed a beta-agonist product by Merck known as Zilmax® to three of them in the final 20 days of the feeding period, and don't feed it to the other three. The proof would be evident on the cutting board, and we were lucky enough to get to see it later in the program, but not right away.



A group of Nebraska cattle feeders were invited to the University of Nebraska Lincoln (UNL) to partake in a learning session at the Loeffel Meat Laboratory on campus. WR magazine tagged along. Here, our group suits up to inspect hanging sides and learn how to grade the beef.

LECTURES FIRST

My wife and I rented a houseboat on Lake Mojave one weekend awhile back, but before they turned this ol' cowboy loose on the waves with a \$75,000 piece of equipment I was required to go through an hour-long 'Skipper's Tutorial'; wise choice on their part, and an even wiser choice on my part for actually paying attention. The UNL beef session was no different; before we hit the Meat Science Lab for the hands-on stuff there were lectures to be absorbed, delivered by industry folks who knew what they were talking about.

Steven Jones, UNL, explained many key elements of the disassembly process in his lecture, *Beef Harvest and Dressing Percent*. Among the interesting things I learned was the fact that Henry Ford envisioned his revolutionary automobile assembly line after visiting

a modern meat packing plant and viewing the 'dis'-assembly process. Jones detailed the Drop items (offal, everything but the carcass), how today's packers use *hot carcass weight* (HCW – the weight of the hanging carcass before it is cooled in the meat locker; cooling causes it to lose another 1-2% of it's original weight), and the economics of *dressing percent* (DP – percentage of the live weight that is the carcass, also known as *yield*).

Marshall N. Streeter, Ph.D., with Merck Animal Health presented a study they did on 3,380 British crossbred heifers harvested at Tyson Fresh Meats in Amarillo, TX, and 3830 crossbred steers harvested at Tyson Fresh Meats in Holcomb, KS. The trial group was fed Zilmax®, the control group was not. In the heifer study, the trial group that was fed Zilmax® had a

dressing percentage (DP) increase of 1.45 percentage units, and the average *hot carcass weight* (HCW) improved by 24 lbs. In the steers, the HCW was increased by 30 lbs.

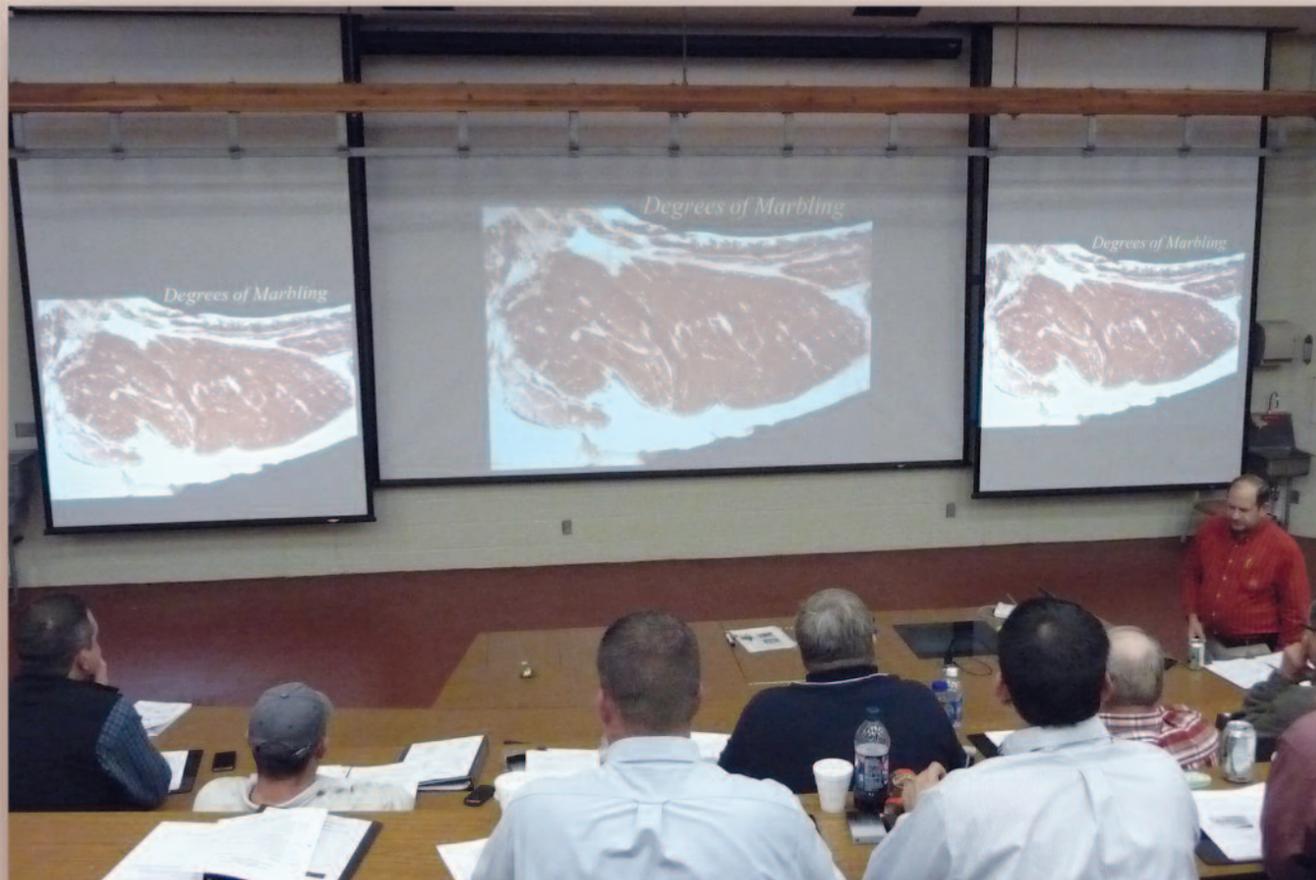
Galen Erickson, UNL, gave a great presentation on the grading system focusing on how muscle growth and fat deposits affect the USDA grade of a primal cut. This information was going to come in handy later in the Meat Science lab (I could hardly wait to get in there).

Kyle Vander Pol, Ph.D., Merck Animal Health, gave us some insight into the Zilmax® product, focusing on these key points;

- The **beta-agonist** Zilpaterol was originally developed to help treat asthma in humans; a beta-agonist compound, when inhaled, relaxes the muscles of the bronchial passage, resulting in dilation and easi-



UNL's Dennis Burson shows us how to figure out the Quality Grade by determining the amount of marbling in the ribeye.



Several interesting classroom presentations, courtesy of UNL and Merck Animal Health, were delivered the day before our group hit the meat lab.

er breathing.

- *Zilpaterol* was deemed ineffective for use in humans, but scientists discovered another possible use; as a repartitioning agent in bovine skeletal muscle development, meaning it redirects nutrients on a cellular level to the production of lean muscle instead of fat.
- Zilmax®, manufactured by Merck Animal Health, has been approved for use in beef cattle around the world for 14 years (Canada, Mexico, South Africa and South Korea).
- Research on Zilmax® was conducted in NE, TX, KS, ID, OK and Alberta consisting of 26,606 head in 14 studies, and 16,488 head in 9 trials. That's a lot of cattle.
- Zilmax®, as a feed additive during the final 20 days of the feeding period, consistently converts feed resources to lean muscle; an average of 30 lbs more carcass weight in steers to be exact.
- The USDA Yield Grade shift is noteworthy; twice the amount of YG 1's (more desirable leaner carcasses) and half the amount of YG 4's and 5's (less desirable fatter carcasses).
- The largest consumer sensory study ever conducted in the U.S. concluded that Zilmax®-fed beef delivered the same juicy, flavorful and tender eating experience as beef from non-supplemented cattle. Warner-Bratzler shear force tests on the Zilmax®-fed beef confirmed that the tenderness levels were well below accepted meat science guidelines for consumer satisfaction.

Jennie Hodgen, Ph.D., Merck Animal Health, talked about the value of the strategy; packers realize the value of the Zilmax®-fed cattle because they end up with more saleable red meat, often the equivalent of an extra steak or two off the tenderloin, which translates into dollars for them. In addition to the beef breeds, a large pen trial of 2,311 calf-fed Holsteins showed an average increase in HCW of 24 lbs in the trial group, with obvious development of the ribeyes and striploins, compared to the control group. Not only that, it can be used on cull cows the same as finished cattle; feed it for 20 days prior to harvest, and tack on a three -day withdrawal period before slaughter.

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In the meat cutting lab, our UNL profs walk us through how to cut the steaks; they need to be a certain thickness and weight in order to appeal to the consumer or the chef. We also learned about trimming the primal cuts to bring out the best in them.



It's easy to see the difference between the striploin of a steer that was fed Zilmax® (R) from one that was not (L).

Finally, Dennis Burson, UNL, gave us a rundown on what we were going to see in the morning. The day before, Dennis and his team of Meat Science students fabricated 6 Red Angus crossbred steers, each pair had a similar start weight; 3 were fed Zilmax for 20 days prior to the 3-day withdrawal and harvest, and the other 3 were not. We were shown video footage of each of the 6 animals on the day before harvest, and they were clearly ready to go. The plan was to disassemble each carcass and see the results for ourselves.

The final session came to an end. There was plenty to uptake for one afternoon, but the presenters made it easy on us with their patient manner and great visuals. After a delicious steak dinner put on by the UNL Meat Science students we retired for the evening. Things were going to get interesting, because tomorrow we would don hardhats, hairnets and white coats to find out for ourselves whether this stuff worked or it didn't.

INTO THE MEAT SCIENCE LAB

Morning found the group of us decked out like a bunch of amateur USDA inspectors trying to keep warm in a classroom/refrigerator as UNL's Dennis Burson began to walk us through the exercises we were about to tackle. The left side of each carcass hung from a rail in front of us, ID'd with the eartag number of the animal. We broke out into teams, and proceed-

ed to learn how to grade a carcass at the ribeye, determine age as per ossification of the vertebrae, and understand how the carcass was fabricated on the floor of the packing house. It was fascinating.

Later, after a safety session on sharp knife use in confined spaces, our group was taken to the meatcutting lab where we took part actually cutting steaks, measuring and weighing them, and vacuum packaging them for sale. It was a fantastic experience for all of us, the room was humming with interest and questions, and the opportunity to work in such a top-notch environment with such knowledgeable profs as the UNL team was a truly special experience.

But back to the Zilmax part of the story. Did it work? Certainly Dennis, nor anyone else involved in the demonstration, could not have known what the outcome would be. There's always a chance of deviation or failure. The only way to tell was to disassemble the carcasses, and there would be no scotching in this case; the entire group was standing right there to bear witness.

The demo was a success, and to illustrate how, I've chosen #3210 steer not fed Zilmax, and Zilmax-fed #3265. The differences were obvious at first glance. Both graded Choice. The Zilmax 3265 ribeye area (REA) was 15.1 sq. inches compared with 3210's 12.3, and the Zilmax carcass had less backfat, which translates into a leaner and more valuable Yield Grade of 2.2 as opposed to a fatter Yield Grade 4.2 on carcass 3210 (fat-

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ter yield grades, of course, get docked). Here's a chart to show the difference in the carcass value.

head and, as the moniker implies, they are passionate about innovation in the beef industry. Dan, who holds a BS in

Tag #	Live Weight	Dress %	Hot Carcass Weight	Quality Grade	Yield Grade	Carcass Value \$
3210 No Zilmax	1220	63.9	779	Choice 0 (Modest amount marbling)	4.2 (more fat)	\$1313.19
3265 Zilmax-fed	1260	64.8	817	Choice - (small amount marbling)	2.2 (less fat)	\$1433.55

The other carcasses fab'd out in similar fashion, although a fair explanation of grading and the grid system is much more complex than an article of this size can handle, but you get the picture. The photos prove it, and I saw it with my own eyes; this beta-agonist increased the value of the 3265 carcass by a significant amount, somewhere in the neighborhood of \$120 over the 3210 carcass.

So how does a cattle feeder feel about the strategy? **Dan Roberts** is the General Manager, North, of **Innovative Livestock Services (ILS)**, a Nebraska company formed when six feedyards and three farms came together under a single management structure. ILS currently feeds 135,000

Animal Science from the University of Nebraska, took time to visit with me the day before the UNL sessions when my hosts toured me around the Holdredge, NE, area where Dan has his office. "We market our cattle primarily on the grid," Dan explains, "and I think, for that purpose, Zilmax works well for us. It is right up there with implanting when it comes to a fundamental management strategy, I believe in it that strongly." **WR**

Thanks to the good folks at University of Nebraska and the team at Merck Animal Health for delivering an interesting and useful hands-on session. Read complete product label prior to use. Zilmax has a three-day withdrawal period. Do not



See that pure white section of the rib that looks like gristle? This is what it looks like in a young animal, say under 20 months. The older the critter gets, the more ossification is seen in that area; the more that part turns from white gristly cartilage to bone.

allow equines access to feed containing zilpaterol, not intended for veal calves or breeding animals.



(Left) This is carcass 3210 that was NOT fed Zilmax (see chart for more). (Right) This is carcass 3265 that was fed Zilmax for the last 20 days of the feeding period (not counting a three day withdrawal before slaughter). You can easily see how much larger the REA (ribeye area) is on this carcass compared to 3210. Also note on 3265, the outside backfat is not as thick and the marbling appears less than on 3210, which is why 3210 graded Yield Grade 4.2 (fatter) and 3265 graded 2.2 (leaner).

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